

Rhodora

JOURNAL OF
THE NEW ENGLAND BOTANICAL CLUB

Vol. 20.

February, 1918.

No. 230.

NOTES ON THE CLAYTON HERBARIUM.

S. F. BLAKE.

ONE of the earliest works on the flora of the United States was Gronovius's *Flora Virginica*, the first edition of which was published at Leyden in two parts in 1739 and 1743, the second in 1763. Worked out at Leyden with Linnaeus's assistance in the 1730's, from the series of specimens sent to Gronovius by John Clayton,¹ clerk of Gloucester County, Virginia, it is of extreme importance as affording the chief basis of perhaps the greater number of North American plants published in the *Species Plantarum*. Although Clayton's herbarium, now incorporated in the general collection of the British Museum, has been frequently consulted by American workers, especially by Dr. Gray, no systematic examination of the whole collection appears to have been made, at least in recent years. While working at the British Museum in 1914 and 1915 I had an opportunity through the kindness of Dr. A. B. Rendle of making a careful study of the whole collection, and the rather numerous changes in nomenclature necessitated by the reidentification of Clayton's specimens are here brought together.

The interpretation of Linnaean names based on several prelinnaean references representing more than one modern species has always been a matter of difficulty, and has often led to serious differences of opinion. The uncertainty often attending the attempt to unravel the confused tangle presented by the Linnaean synonymy has in some cases led authors to cut the Gordian knot by arbitrarily typifying the Linnaean species by the specimens in the Linnaean Herbarium. It

¹ See Britten, *Journ. Bot.* xlvii. 297-301 (1909), for an interesting account of Clayton.

is or should be well known, however, that the specimens in the Linnaean Herbarium are not types in the modern sense (except in rare cases, when Linnaeus's species were based entirely on specimens in his herbarium at the time of publication), and their identity is often only of minor significance. It was Linnaeus's practice to add at any time specimens which he considered to represent species described in the *Species Plantarum* or other works, which has in the past been a source of some confusion to botanists who have examined his herbarium. Through the careful studies of Mr. B. Daydon Jackson,¹ now fortunately accessible to all, it is possible to learn the date of accession of all specimens in the Linnaean Herbarium, and thus to estimate their value as representatives of the Linnaean species.

Too much stress has been laid, especially by modern geneticists, on an assumed fundamental difference between Linnaean and modern ideas of species. The Linnaean species, properly considered, was not a mere aggregation of more or less closely related entities, but in its essentials identical with the specific units of the great majority of reputable botanists since his time. Composite and sometimes hopelessly confused species he had, but they were due in great part to the fact that his material was so largely merely bibliographical, and even modern botanists have sometimes based new specific names on specimens in hand which when examined by other workers have been found to represent not merely two or more species but sometimes even distinct genera. The gradual tightening of specific lines, from Linnaeus's day to our own, has been due in the main not to an alteration of ideas but to more careful study of better and more abundant material, and to the discovery of constant and significant differences in the smaller and less obvious structures of the plant formerly little attended to. The conflict in the specific ideal comes not between that of Linnaeus and that of the modern systematist, but between the latter and that of the geneticist, and its settlement must be left to the future.

If then the Linnaean species, when an aggregate, differs in no essential from any modern aggregate species, how is it to be typified? Only in exceptional cases can the Linnaean Herbarium solve the question. The "first citation" method, although it may sometimes be of service, is surely not to be adopted as an arbitrary rule. The principle of the "name-bringing synonym," likewise, though often useful, is by

¹ B. D. Jackson, "Index to the Linnean Herbarium," *Proc. Linn. Soc.* 124th Sess. Suppl. 1-152 (1912).

no means so clear or so significant in its application to prelinnaean synonymy as it has been found to be in the case of modern binomials, and should not be too hastily resorted to. When a prelinnaean polynomial has been wholly or largely adopted by Linnaeus for his diagnostic phrase (the “nomen specificum” of Linnaeus, whose “nomen triviale” has become our modern “specific name”), the plant so honored should certainly be considered as entitled to the restricted Linnaean name, unless some valid objection to this course can be presented. In many and perhaps most cases, however, the application of Linnaean names must be determined by the action of subsequent authors, and here choice must be made between two courses, different in their methods but sometimes leading to the same end. By what may be called the process of *unconscious elimination*,—through the creation of new specific names for units involved in a given Linnaean species by subsequent authors, without reference to or (so far as is shown by published notice) knowledge of their connection with that Linnaean species,—the latter may eventually be reduced to a single entity to which the name might be restricted. On the other hand, an author with a knowledge of the several entities constituting a Linnaean species as originally described may, even after the more or less complete dissection of a Linnaean species in the manner just described, restrict it to some one of its original components, perhaps already named, and assign a new name to that portion of it to which, by the first method of procedure, the Linnaean name would be restricted. This second method, which by the way is the one now adopted by ornithologists for the determination of generic types, seems the soundest that can be adopted. It is scarcely necessary to add that such further use of this power of subsequent designation of the type as may be necessary should not be arbitrary, but should where possible incorporate the established work of previous authors who have not been guided by this principle.

1. *Scirpus capitatus* L. Sp. i. 48 (1753).¹ From the subjoined Linnaean diagnosis it will be seen that this species was based almost entirely on the Gronovian reference, which in turn is based on *Clayton* 380, now in the British Museum. This specimen is the plant now

¹ *Scirpus capitatus*.

“5. SCIRPUS culmo tereti nudo setiformi, spica subglobosa.

“*Scirpus culmo setaceo nudo, spica subglobosa. Gron. virg. 12.*

“*Habitat in Virginia.*”

known as *Eleocharis tenuis* (Willd.) Schultes, with which it has previously been identified by Gray and C. B. Clarke, although no published record has been made. In the Linnaean Herbarium are two sheets representing *S. capitatus*: 1st., a sheet of the plant now known as *Eleocharis capitata*, received from Patrick Browne in 1758, and consequently of no importance in fixing the type of the species; 2nd., a sheet of *E. obtusa* (Willd.) Schultes, collected by Kalm and known to Linnaeus before 1753. As the description in the Species Plantarum refers mainly to the Clayton specimen, it is necessary to regard this as the type of the species, the Patrick Browne specimen being, as already noted, of no consequence in this connection since it was not known to Linnaeus before 1758. It therefore becomes necessary to adopt for the widely distributed tropical and subtropical species that has been called *Eleocharis capitata* the name **ELEOCHARIS caribaea** (Rottb.) Blake, based on *Scirpus caribaeus* Rottb. Descr. Pl. Rar. Progr. 24 (1772); Descr. Ic. Nov. Pl. ed. 1. 46. t. 24 (1772); ed. 2. l. c (1786). The variety with purplish-brown scales and purplish-black achenes, localized at the southern end of Lake Michigan, becomes *E. CARIBAEA* var. **dispar** (E. J. Hill) Blake (*E. dispar* E. J. Hill, Bot. Gaz. vii. 3 (1882); *E. capitata* var. *dispar* (E. J. Hill) Fernald, RHODORA viii. 126 (1906).

The name *Eleocharis capitata* (L.) R. Br., Prod. Fl. Nov. Holl. i. 225 (1810), has a somewhat peculiar status. It was based on "Scirpus capitatus Linn. sp. pl. ed. Willd. 1. p. 294," but was expressly distinguished from the Gronovian plant, which of course Brown had examined, type of *S. capitatus* L. Since however Willdenow's *S. capitatus* is based directly on Linnaeus's, the application of Brown's name must be determined by the Clayton plant on which rests the name-bringing synonym of Linnaeus. The name **ELEOCHARIS CAPITATA** (L.) R. Br. must therefore now be restricted to the plant which has long been called *Eleocharis tenuis* (Willd.) Schultes.

2. *Scirpus autumnalis* L. Mant. ii. 180 (1771).¹ This species was based solely on Clayton 772, which, as well represented in the Linnaean Herbarium and the Clayton Herbarium, is the plant known in

¹ *Scirpus autumnalis*.

"SCIRPUS culmo ancipiti nudo, umbella decomposita foliosa, spiculis ovatis.

"Scirpus foliosus pusillus autumnalis [*sic*], culmo plano utrinque paullum compresso. Clayton 772.

"Habitat in Virginia.

"Facies Junci pilosi. . . &c."

recent years as *Fimbristylis Frankii* Steud. Syn. Pl. Cyp. 111 (1855), for which the name *F. geminata* (Nees) Kunth has been adopted in the second edition of Britton & Brown's Illustrated Flora (i. 322 (1913)). The name FIMBRISTYLIS AUTUMNALIS (L.) R. & S. Syst. ii. 97 (1817) must accordingly be transferred to this species. The form with contracted inflorescence, described by Prof. Fernald, RHODORA xi. 180 (1909), from Orono, Maine, under the name *F. Frankii* var. *brachyactis*, seems best treated as *F. AUTUMNALIS* (L.) R. & S. forma **brachyactis** (Fernald).

The plant now passing as *F. autumnalis* has received numerous names at different times under several genera, among which the oldest seems to be *Scirpus mucronulatus* Michx. Fl. i. 31 (1803). The types of this species in the Michaux Herbarium at Paris have obligingly been examined by M. Gadaceau of the Paris Herbarium and pronounced identical with material sent him of the southern species hitherto called *F. autumnalis*. The *F. autumnalis* of our present manuals must consequently become FIMBRISTYLIS **mucronulata** (Michx.).

The type of *Scirpus complanatus* Retz. (= *Fimbristylis complanata* (Retz.) Link), in the British Museum — a species sometimes synonymized with *F. autumnalis* of authors — represents a different species, with which Harris 11618 from Jamaica (in the British Museum) agrees very well; the type of *Cyperus amentaceus* Rudge, Pl. Guian. 16. t. 19 (1805 ?), is identical with it.

A considerable range extension of the true *F. autumnalis* (*i. e.*, *F. Frankii* Steud.) is indicated by some rather young plants in the British Museum from Nuttall, labelled "R[ocky] Mts.," which I am unable to distinguish from this species.

3. *Schoenus glomeratus* L. Sp. i. 44 (1753).¹ Examination of the extensive series representing *Rynchospora glomerata* (L.) Vahl and its so-called var. *paniculata* (Gray) Chapm. in the Gray Herbarium shows that the two are specifically distinct, as they were originally treated by Dr. Gray. The more northern plant, which has passed as true *glomerata*, has an achene 1.5 mm. long (including the crustaceous "perianth-"

¹ *Schoenus glomeratus*.

"8. SCHOENUS culmo triquetro folioso, floribus fasciculatis, foliis planis, pedunculis lateralibus geminis.

"Schoenus culmo triquetro, pedunculis geminis lateralibus, floribus conglomeratis. *Gron. virg.* 131.

"Habitat in Virginia."

base, but excluding the style) and 0.8 mm. wide, while in the more southern var. *paniculata* the achene is 2 by 1.5 mm. and much more umbonate. In the southern plant, moreover, the spikelet is usually 1-fruited, in the northern plant 2-3-fruited, as long ago noted by Kunth (Enum. ii. 296 (1837)) in describing the southern form as *R. glomerata* var. *robustior*. This difference in size and shape of achenes, which runs with great constancy through a series of more than 115 collections of the two plants, in combination with other differences in size of plant, breadth of leaf, looseness of inflorescence, and number of achenes in the spikelet fully confirms the specific distinctness of the two plants.

Both the specimen from Kalm in the Linnaean Herbarium, which has recently been re-examined for me through the kindness of Mr. B. Dayton Jackson, and the plant of Clayton (no. 585) on which the Gronovian citation is based, belong to the large-fruited southern plant which was named *Rhynchospora paniculata* by Gray in 1835, and has of late years been treated as a variety of *R. glomerata*. It will now be necessary to restrict the name RYNCHOSPORA GLOMERATA (L.) Vahl, Enum. ii. 234 (1805), to the large-fruited plant, Gray's *R. paniculata*, which as shown above deserves specific recognition. This species seems to have no noteworthy variations.

The first name which can be taken up for the more northern-ranging species which has passed as typical *R. glomerata* seems to be *Schoenus capitellatus* Michx. Fl. i. 36 (1803). Michaux's specimens were long ago identified by Dr. Gray (mss. notes in Gray Herb.) as "a state of *R. glomerata*,—from which the description is mostly drawn,—and a young *R. Elliottii*" (= *R. schoenoides* (Ell.) Wood). Wishing to secure more precise information as to these specimens, I sent specimens of *R. glomerata* (i. e., the plant so called in our manuals), *R. paniculata*, *R. schoenoides* (Curtiss 6625), and *R. axillaris* to Dr. H. Lecomte, director of the Paris Herbarium, with the request that they be compared with the material in the herbarium of Michaux. His assistant, M. Gadaceau, has kindly sent me the following notes on the material referred to *Schoenus capitellatus* in the herbaria of Michaux and of Drake del Castillo.

"1. Herbiers du Museum. Deux feuilles d'herbier. L'une comprend, comme l'indiquent les étiquettes au crayon signées A. Gray qui y sont jointes deux formes: *Rhynchospora glomerata* Vahl, *R. Elliottii* A. Gray. L'autre offre quatre beaux échantillons du *Rhyn-*

chospora glauca Vahl. Tous ces échantillons sont accompagnés d'une étiquette signée de Michaux, avec le nom de *Schoenus capitellatus*.

"2. Herbar Drake. Cet herbar contient quatre feuilles de plantes de Michaux (Herbarium Richard). 1. Étiquette *Schoenus fascicularis* signée Michaux — deux échantillons: l'un qui est bien le *Rhyn. fascicularis* Vahl, l'autre qui est le *R. Elliottii* A. Gray non Dietr. 2. Étiquette *Schoenus* (sans nom d'espèce) signée Michaux — C'est le *R. glomerata* Vahl! 3. Étiquette *Schoenus capitellatus* (*sic*) signée Michaux avec l'annotation: 'Setulae retrorsum muricatulae! an *S. glomeratus* ? Walth.—Caroline.' Ces échantillons ont été rapportés, avec raison, par Richard (Achille, non Louis Claude) au *R. glauca* Vahl. 4. Deux échantillons étiquette *Schoenus distans*, signée Michaux, avec l'annotation '*S. glomeratus* L.?. Caroline'. Ces échantillons ont été rapportés, avec raison, par Richard (Achille) au *Rhync. glomerata* Vahl.

"Résumé — Nos plantes de Michaux étiquetées *Schoenus capitellatus* correspondent aux *Rhync. glomerata* Vahl.; *R. Elliottii* A. Gray non Dietr.; *R. glauca* Vahl."

Although, as will be seen from the above, the status of Michaux's specimens is even more confused than was indicated by Dr. Gray, it seems best to avoid the creation of a new name for the species by adopting Michaux's *S. capitellatus* and typifying it by the undoubted specimen of *R. "glomerata"* in the Michaux Herbarium. The species called *Rynchospora glomerata* in our current manuals then becomes RYNCHOSPORA CAPITELLATA (Michx.) Vahl, Enum. ii. 235 (1805).

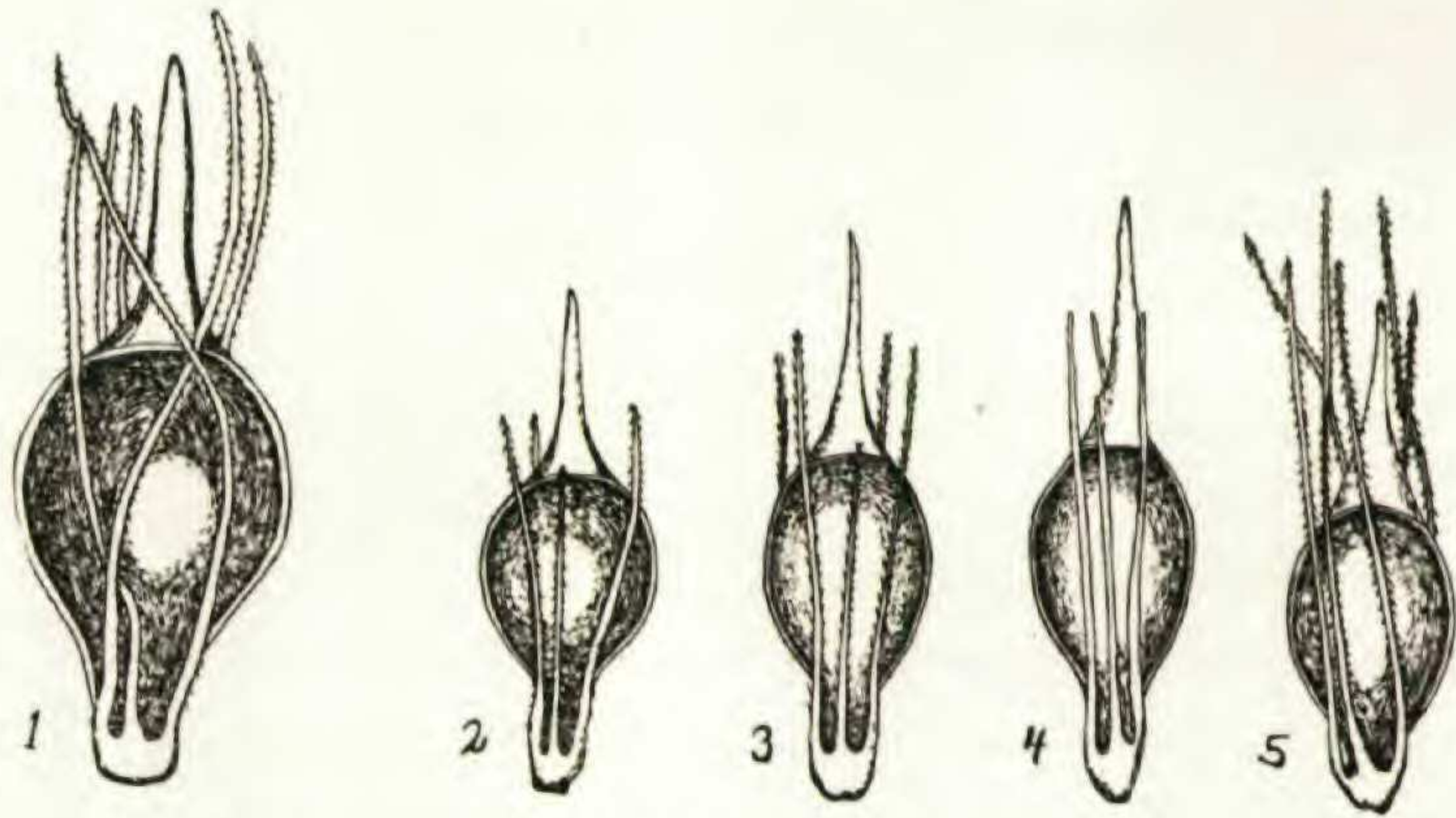
Rynchospora capitellata is a somewhat variable species. The great bulk of the material examined, from Maine and Ontario to Florida and Missouri, has the bristles of the perianth densely and retrorsely barbed. For this, the typical form of the species, the earliest varietal name is *R. glomerata* var. *minor* Britton, based on starved and depauperate specimens from the White Mountains not otherwise differing from the typical form of the species. Another plant, collected by E. B. Bartram in Pennsylvania and by Shull in Maryland, is peculiar in its upwardly barbed bristles. Two sheets, from North Carolina and Indiana, represent the *R. glomerata* var. *discutiens* of C. B. Clarke, characterized by its smooth bristles. All three of these forms have the achene contracted into a rather long stipitiform base. In the *R. glomerata* var. *leptocarpa* of Chapman, from Virginia to Florida

and Mississippi, the achene is provided with a much shorter and more abrupt base. These forms may be defined as follows.

RYNCHOSPORA CAPITELLATA (Michx.) Vahl var. **minor** (Britton) (typical form).—*Rynchospora glomerata* var. *minor* Britton! Trans. N. Y. Acad. Sci. xi. 89 (1892), also as Contr. Columb. Coll. No. 26. 15.—Aristae retrorsum barbatae.—The common form, from Me. and Ont. to Fla. and Mo.—Fig. 2.

Var. **controversa**.—Aristae prorsum barbatae.—PENNSYLVANIA: moist meadow, Frazer, Chester Co., 14 Aug. 1910, *E. B. Bartram* 1129* in part (TYPE in Gray Herb.). MARYLAND: on bank, south of Havre de Grâce Park, Chesapeake Bay region, 28 July 1902, *G. H. Shull* 129.—Fig. 3.

Var. **discutiens** (Clarke).—*Rynchospora glomerata* var. *discutiens*



FIGS. 1-5.—Fig. 1. *Rynchospora glomerata* (L.) Vahl (*Curtiss* 5739, Florida). Fig. 2. *R. capitellata* (Michx.) Vahl var. *minor* (Britton) Blake (*Gray, N. Am. Gram. &c. Exs.* 94). Fig. 3. *R. capitellata* var. *controversa* Blake (*Bartram* 1129 p. p.). Fig. 4. *R. capitellata* var. *discutiens* (Clarke) Blake (*Buckley*). Fig. 5. *R. capitellata* var. *leptocarpa* (Chapm.) Blake (*Curtiss* 5926).—All $\times 10$.

Clarke! in Britton, Trans. N. Y. Acad. Sci. xi. 89 (1892).—Aristae laeves vel ut dicitur apice barbatae.—NORTH CAROLINA: mountains, *Buckley* (COTYPE COLL.). INDIANA: sterile damp places, *Millers*, 28 Aug. 1908, *L. M. Umbach* (in *A. Kneucker, Cyp. &c. Exsicc.* no. 184).—Fig. 4.

Var. **leptocarpa** (Chapm.)—*Rynchospora glomerata* var. *leptocarpa* Chapm. in Britton, Trans. N. Y. Acad. Sci. xi. 88 (1892).—Achenium breve basi abrupte breviterque stipitatum; aristae retrorsum barbatae.—SOUTH CAROLINA: Aiken, July 1866, *Ravenel*. FLORIDA: near De Funick Springs, 6 July 1897, *Curtiss* 5926. MISSISSIPPI: Saratoga, 3 Aug. 1903, *Tracy* 8616.—Fig. 5.

The achene of *R. glomerata* (L.) Vahl (*R. paniculata* Gray) is shown for comparison in fig. 1.

(To be continued.)